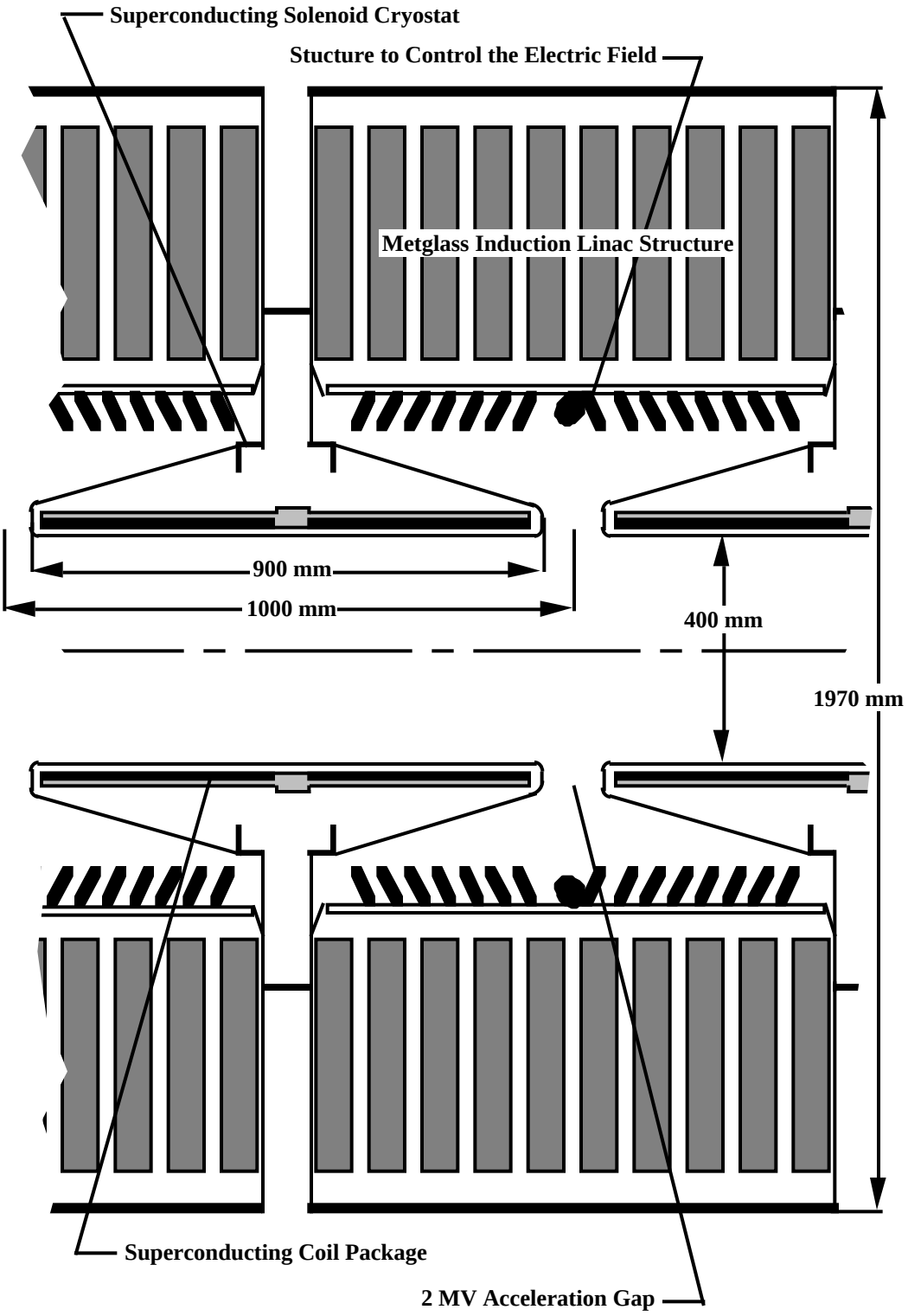
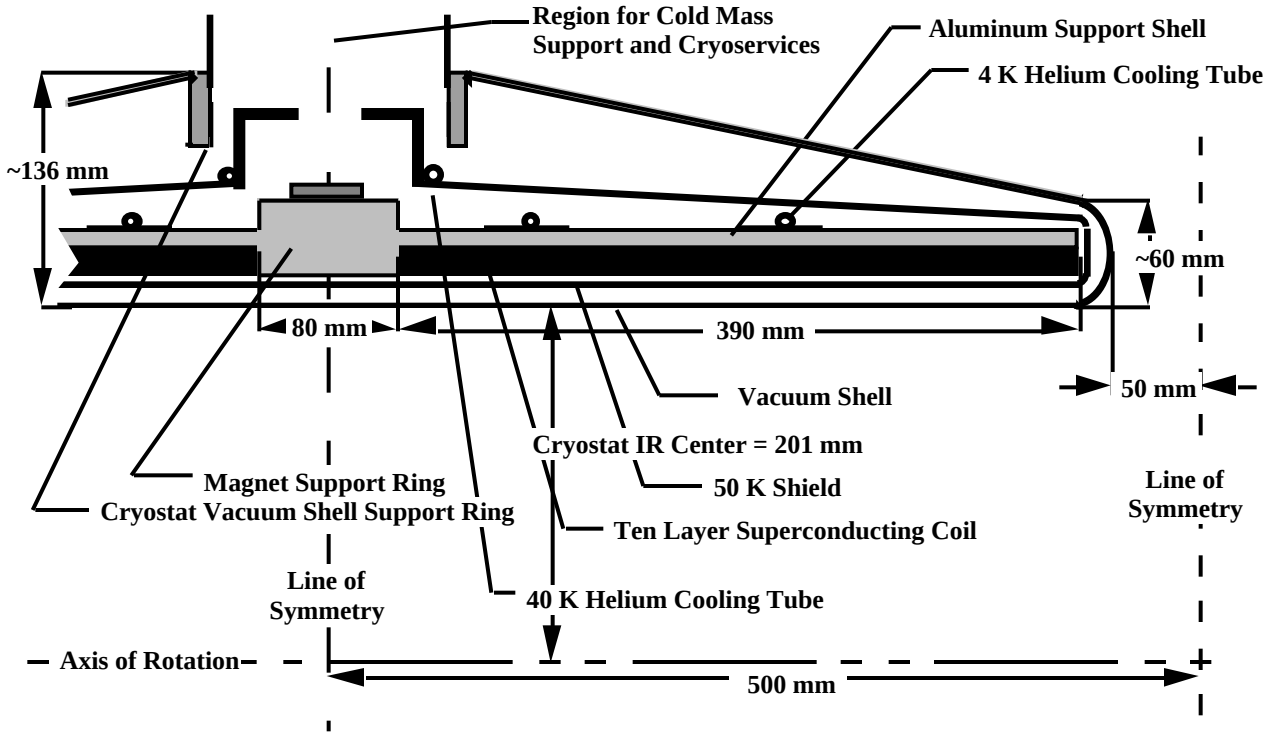
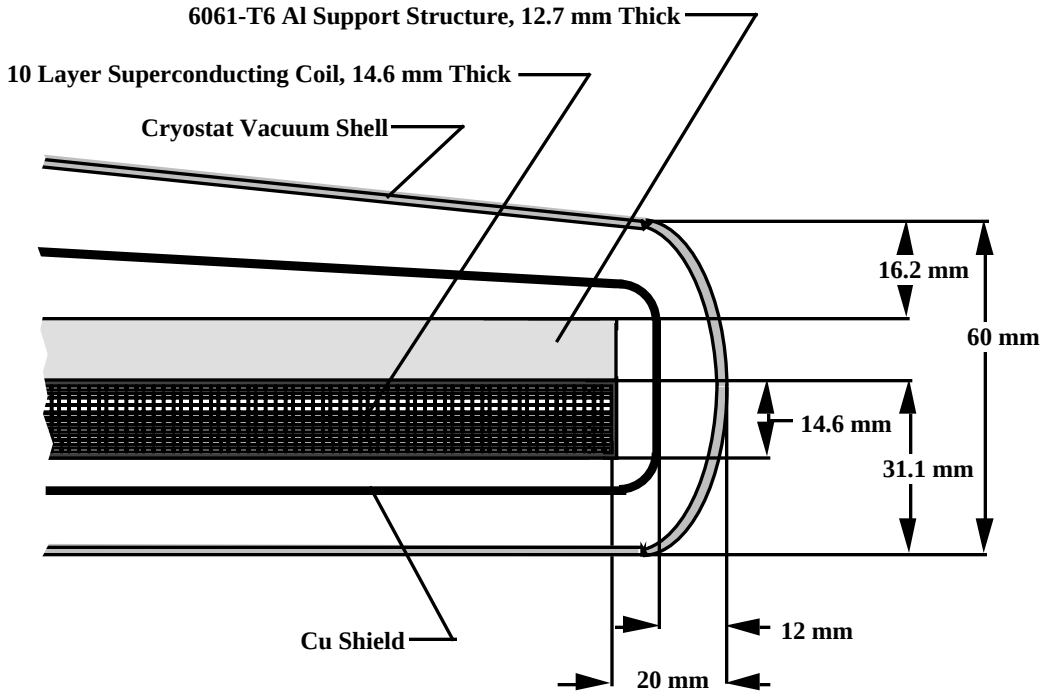


Cross-section View of the 3.0 T Phase Rotation Solenoid within an Induction Linac



Cross-section of the Induction Linac Superconducting Coil and Cryostat



. A Cross-section of the End Tip of the Induction Linac Solenoid

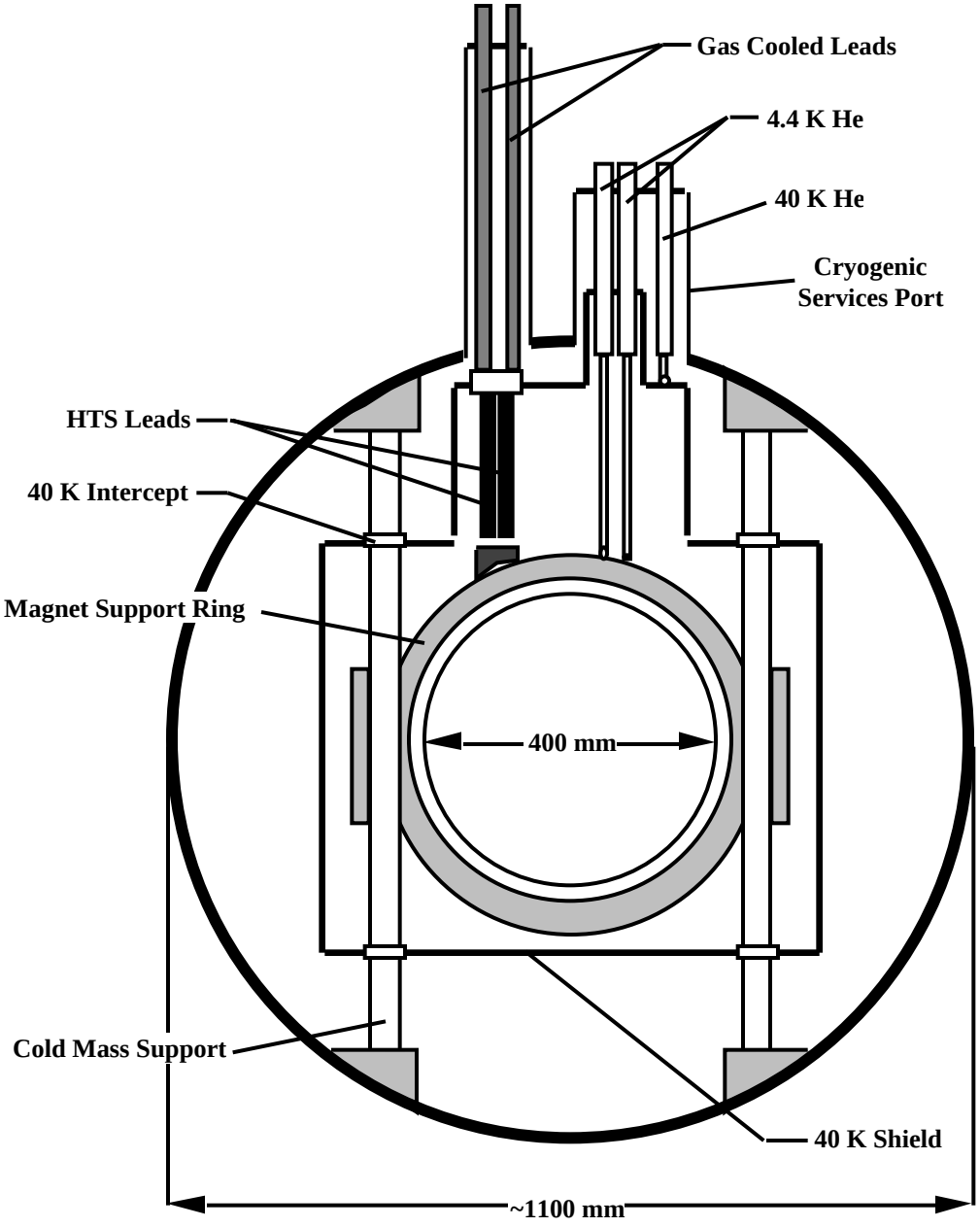


Figure 6. A Cross-section View Showing the Cold Mass Support Tubes,
The HTS and Gas Cooled Electrical Leads, and the 4 K and 40 K Cryogenic Services Port

3 Tesla Phase Rotation Solenoid Parameters

Magnet Physical Parameters

Induction Linac Cell Length (mm)	1000.0
Magnet Cryostat Length (mm)	900.0
Magnet Coil Package Length (mm)	860.0
Number of Coils in the Coil Package	2
Length of Each Superconducting Coil (mm)	390.0
Inner Cryostat Radius (mm)	201.0
Superconducting Coil Inner Radius (mm)	224.3
Superconducting Coil Thickness (mm)	14.55
Support Structure Thickness (mm)	12.7
Magnet Cryostat Thickness at Ends (mm)	60.0
Magnet Cryostat Thickness at Center (mm)	136.0
Cold Mass per Magnet Cell (kg)	247.0
Overall Mass per Magnet Cell (kg)	292.0

Magnet Electrical Parameters

Average Central Induction (T)	3.00
Peak Induction in the Windings (T)	~4.5
Number of Turns per Cell	4580
Magnet Design Current (A)	521.27
Magnet Design Operating Temperature (K)	4.4
Conductor Critical Current at Operating T (A)	~790
Magnet Stored Energy per Cell E (kJ)	618
Magnet Self Inductance per Cell (H)	4.55
Superconductor Matrix J (A mm^{-2})	331
E J^2 Limit per Magnet Cell (J A^2 m^{-4})	6.76×10^{22}